

GangPak™

User Note

984-0004-006

May 1987

USER NOTE

This user note applies to:

Model Number	Version Number	Manual Part Number
GangPak	V7.1	981-0004-002 and up

The following information is provided to supplement the GangPak™ Operator's Manual. This document lists the latest equipment configuration covered by the manual combined with the User Notes and contains the manual updates. This document helps ensure that Data I/O's customers receive the most accurate documentation possible.

TIMING DIAGRAMS

Timing diagrams are no longer a part of the GangPak Operator's Manual.

PAGE REPLACEMENT INSTRUCTIONS

1. Replace pages 2-9/2-10 in the SELECT FUNCTIONS section of your Operator's Manual.
2. Replace pages 3-1 and 3-2, ERROR MESSAGES with pages 3-1/3-2 and 3-3/3-4.

ACCEPTANCE TEST PROCEDURE

The Acceptance Test Procedure for GangPak is included following the replacement pages.

Device List

The updated Device List is included, documenting all of the devices currently supported by GangPak.

USER NOTE

Code E3-Display Checksum of the Desired Device

Function E3 allows you to determine the checksum of a device in any one of the sockets. The correct family and pinout codes must be selected before executing this select code. SEL E3 does not alter programmer RAM data.

To display the checksum, do the following:

Procedure	Display
1. Press SELECT	SELECT CODE ^
2. Press E 3 START	01 CHKSUM
3. Enter socket number (1-8). Press START. Y = socket number.)	0Y CHKSUM

After calculating the checksum the display will read
(XXXX is the checksum of the device).

XXXX 0Y CHKSUM

Code EF-Display Configuration Information

Function EF calls up a four-digit hexadecimal configuration number and a two-digit or three-digit decimal version number that correspond to the revision level and version number of the GangPak firmware. These numbers are used when identifying equipment over the phone to Data I/O technical support personnel.

To display the GangPak firmware configuration and version number, do the following:

Procedure	Display
1. Press SELECT	SELECT CODE ^
2. Press E F START	XXXX VER YY.Y**

NOTE

XXXX represents the GangPak firmware configuration number, and YY.Y represents the version number.

ERROR MESSAGES

This section contains the GangPak error messages in a table format. The table begins with the two hexadecimal character code followed by an abbreviated description for a maximum of sixteen total characters. Opposite the error code is a description that includes the full error message, what is the most probable cause(s) of the error, and steps the operator can take to alleviate the error. If these steps are not successful contact your local Data I/O Service Center.

NOTE

Always verify the family and pinout codes if an error occurs. Refer to the device list in Appendix A to cross-check the family/pinout codes. If you have a recurring error, call your local customer support center listed at the back of this manual.

Code	Name	Description
20	NONBLANK	Non Blank: The device you are attempting to program contains already programmed locations. You can program over these locations by pressing START.
21	ILLEGAL BIT	Illegal Bit Error: The device cannot be programmed due to already programmed locations of incorrect polarity. If the device is erasable, remove it from the GangPak, erase it, and reprogram it.
23	VERIFY FAIL	First-Pass Verify Error: The device data was incorrect on the first pass of the automatic verify sequence during device programming. Remove the device(s) that failed the verify test and reverify the remaining devices.
24	VERIFY FAIL	Second-Pass Verify Error: The device data was incorrect on the second pass of the automatic verify sequence during device programming.

Code	Name	Description
27	RAM EXCEEDED	Insufficient RAM: Due to the value of the Begin RAM Address, there is insufficient RAM to program the device, or the total allotment of RAM resident is less than the word limit of the device. Check that the beginning RAM address, word count of the device, selected block size, and set size and word size are correct.
31	EXCSS CURRENT	Excessive Current Drain: The operation aborted due to excessive current drain by a device. Remove the devices. If the problem persists, a hardware failure may have occurred that requires servicing.
32	DEV BACKWARD	Backward Device: The operation aborted due to Vcc level test indicating a backward device. Remove and reinsert the device correctly positioned.
35	PROG PAK ERR	Faulty Chip Select: The operation aborted due to data being present while a device is disabled. Remove the device. If the problem persists, a hardware failure may have occurred that requires servicing.
38	BAD CAL NO	Illegal Operation During Calibration: An illegal or invalid operation was attempted during calibration. See the calibration measurement chart for the proper operational procedures.
98	DEV EXCEEDED	Incorrect Block Size: The block size selected exceeds word count of the device. Reset the block size value.

Code	Name	Description
A1	NO ID FOUND	No Electronic Identifier Found: The device does not have an electronic identifier. The electronic identifier mode cannot be used. To program this device enter the normal family and pinout code.
A2	INVALID ID	Invalid Identifier: The electronic identifier of the device has been read and the device contains an invalid or unknown identifier, or a device(s) identifier is different from the other devices. Consult the device table for the correct family and pinout codes. Try the operation again using these codes.
A4	GANG PRG ONLY	Gang Programming Mode Only: Only the gang programming mode is allowed for this operation (set size = 1 and word size = 8). This device cannot be programmed in non-gang mode with software data protection selected. Select the proper set and word size for the gang mode, or use Select Code C3 to select unprotected data.
A6	MISREG DEVICE	Misregistered Device: A 24-pin device has been inserted that is making contact with the upper portion of the socket. Be sure that all of the devices have been inserted correctly. If the error occurs when a 28-pin device is inserted, check to be sure the correct family and pinout codes have been entered.
A7	BAD SET/WORD	Incorrect Set Word Size Combination: The set size (automatically calculated during load or selected manually) and word size combination exceeds GangPak's capabilities. Check for the correct set size and word size selections.

Code	Name	Description
A8	WRONG FAM/PIN	Incorrect Family Code and/or Pinout Code: An improper family code and/or pinout code has been selected. Refer to the family and pinout codes in Appendix A for the correct device codes. If you are sure the code you are using is correct, you may disable this error by using select code "BC".
A9	ILLEGAL DEV	Illegal Insertion: A device has been inserted in a socket that must be empty. Remove the device(s) that are in the wrong socket(s).
B1	NO BLOCK LIM	No Block Limits: This EEPROM cannot be programmed using block limits (DEV ADDR/SIZE must be at default state). Set the device address and the size to the default values of zero (0).

GangPak™

Acceptance Test Procedure

ACCEPTANCE TEST

Data I/O Corporation warrants to the original purchaser of the product described by the GangPak Operator's Manual that the product was fully functional to the extent of its specification at the time of shipment from the factory. Data I/O further certifies that the test equipment used to test the product was calibrated to standards that are traceable to the National Bureau of Standards as appropriate.

This procedure is provided for customers whose company policy requires that an inspection test be performed before the unit may be accepted.

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INTRODUCTION

WARNING

This procedure is for qualified service personnel only; do not attempt the operation if you are not qualified to do so.

Your GangPak was tested both electrically and mechanically before it was shipped, and was carefully packaged to prevent shipping damage. It should arrive free of any defect, without marks or scratches, and in perfect operating condition. However, carefully inspect the instrument for any damage that may have occurred in transit. If you note any damage, file a claim with the carrier and notify Data I/O. A list of sales and technical support offices is located at the back of the GangPak operator's manual.

The GangPak performance check consists of a brief procedure to check supply voltages to the socket pins, followed by a keyboard verification of proper operation. The supply voltage check is documented on a measurement chart.

Performance Check

The following equipment is necessary to do the first part of the performance check Voltage Verification:

- Three and a half-digit digital multimeter (DMM). The dcV accuracy of the DMM must be -0.25% or better.
- Compatible programmer (refer to the Introduction section of the GangPak Operator's Manual for a listing of compatible programmers)

CAUTION

Remove all devices from the sockets before entering the calibration mode (see the Getting Started section of the GangPak operator's manual for details). Waveform generation may damage any device in the GangPak sockets.

Voltage Verification

To complete the first part of the performance check, do the following.

NOTE

If readings for any test do not fall within the specification given in the measurement chart, contact your nearest Data I/O customer support center.

1. Install the GangPak into the programmer.
2. Turn the programmer power on (see the programmer manual).
3. Put the programmer into the calibration mode by following the key sequences in the following table.

NOTE

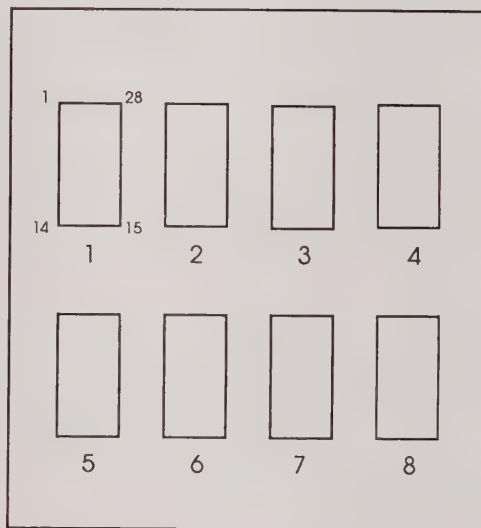
Because the voltage verification test checks only supplies that can be accessed externally, some steps of the standard calibration procedure are omitted on the measurement chart. Press the ENTER or START key to increment the programmer to each step listed on the chart.

Key Sequence to Access the Calibration Mode

Programmer System	Enter Calibration Mode	Key Sequence To: Increment Step No.	Decrement Step No.
19	Press SELECT Press C2 Press ENTER Enter Step Number Press Start	Press ENTER	Press REVIEW
29A/29B	Press SELECT Press C1 Press START Enter Step Number Press Start	Press START	Press REVIEW
100A	Press SELECT Press 12 Enter Step Number Press Start	Press START	Press BACKSPACE

ACCEPTANCE TEST

4. Perform the steps on the measurement chart. For each general calibration step on the measurement chart do the following:
 - Take measurement readings at the device sockets described on the measurement chart; the figure shows the pin numbers for the sockets.



- Ground the digital multimeter to socket 8, pin 14 on the front panel of GangPak.
- Access each new step by pressing the START (or ENTER) key. The new step number will appear in the display when the GangPak is ready for the next step. To go back to a previous test, press the REVIEW (or BACKSPACE) key.

The voltage measurement chart on the following page includes the following headings:

- **Step No.:** tells which step to use for each test. Step numbers are keyed in at the programmer keyboard and are reflected in the display.
- **Test No.:** identifies individual tests for each step.
- **Test Description:** identifies the functions being tested.
- **Measurement Test Location:** tells which socket pins to probe for measurement.
- **Measurement:** specifies allowable measurement ranges. If a reading falls outside the range, contact your nearest Data I/O customer support center.
- **Comments:** gives special instructions for particular tests.

Verification of Operation

Once the voltage verification is finished, you may proceed to the operational verification part of the test. This procedure consists of loading a blank PROM with data from a master PROM.

NOTE

You should see your programmer's manual for specific details on doing load operations; the procedure here gives only general instructions. The sumcheck of the master device must be known and written down prior to beginning this operation.

Do the following to complete the verification of operation.

1. Install the GangPak into the programmer.
2. Turn the programmer power on (see the programmer manual).
3. Transfer the device data from the master PROM installed into socket 1 to the programmer's RAM (see the programmer manual).
4. Transfer the RAM data to a blank device installed into socket 1 (see the programmer manual). The sumcheck displayed when the operation is completed must match the known sumcheck of the master PROM; if not, contact your nearest Data I/O customer support center.
5. Verify the data in the programmed PROM with the RAM data (see the programmer manual) by performing 7 more verify operations, with the PROM installed into a different socket (sockets 2-8) each time.

GangPak Performance Check Measurement Chart

Step No.	Test No.	Test Description	Measurement Location Socket Pin	Measurement			Comments
				Min	Nom	Max	
2	4	V_{cc} linearity check	2/28	10.90	11.00	11.10	Note that all LEDs are off. Error indicated if socket data lines are not tristate. LED's indicate problem sockets.
	5	V_{pp} linearity check	2/1,22,23	14.90	15.00	15.10	
3	6	V_{cc} linearity check	2/28	2.90	3.00	3.10	
	7	V_{pp} linearity check	2/1,22,23	5.90	6.00	6.10	
4	8	Cold socket test	All/All	-0.10		0.40	
6	13	Pin 26 V_{cc}	All/26	6.60	6.70	6.80	
14	32	Address, data and controls high	All/2,4,6,8,10,12,15,17,19 21,23,25,27	4.00		5.50	
	33	Address, data and controls low	All/1,3,5,7,9,11,13,16,18,20, 22,24,26,28	-0.10		0.40	
15	34	Address, data and controls low	All/2,4,6,8,10,12,15,17,19 21,23,25,27	-0.10		0.40	
	35	Address, data and controls high	All/1,3,5,7,9,11,13,16,18,20, 22,24,26,28	4.00		5.50	

ACCEPTANCE TEST

DEVICE LIST

Following is a complete listing of the devices currently programmable with the GangPak. The devices are organized by manufacturer, and are listed in numerical order.

DEVICE LIST

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
Advanced Micro Devices							
27128	28	DIP	EPROM		V01	AF	51
27128A	28	DIP	EPROM		V05	C1	51
27128APC	28	DIP	EPROM		V07	D6	51
2716	24	DIP	EPROM		V01	19	23
2716B	24	DIP	EPROM		V07	C2	23
27256	28	DIP	EPROM		V04	C1	32
2732	24	DIP	EPROM		V01	19	24
2732A	24	DIP	EPROM		V01	27	24
2732B	24	DIP	EPROM		V07	C2	24
27512	28	DIP	EPROM		V05	DD	A4
2764	28	DIP	EPROM		V01	AF	33
2764A	28	DIP	EPROM		V05	C1	33
2764APC	28	DIP	EPROM		V07	D6	33
2817A	28	DIP	EEPROM		V07	BF	A2
2864B	28	DIP	EEPROM		V07	CA	A6
9716	24	DIP	EPROM		V01	19	23
9732	24	DIP	EPROM		V01	19	24
9732A	24	DIP	EPROM		V01	27	24
9764	28	DIP	EPROM		V01	AF	33
9864	28	DIP	EEPROM		V05	C9	A6
Atmel							
27256	28	DIP	EPROM		V07	93	32
27C256	28	DIP	EPROM		V07	93	32
27C512	28	DIP	EPROM		V07	4B	A4
27C513	28	DIP	EPROM		V07	5B	5E

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
27C515	28	DIP	EPROM		V07	5B	CA
27C64	28	DIP	EPROM		V07	93	33
27HC64/L	28	DIP	EPROM		V07	93	33
27HC641/L	24	DIP	EPROM		V07	90	67
28C64	28	DIP	EEPROM		V07	C4	98
Exel							
2816A	24	DIP	EEPROM		V05	B7	23
2864A	28	DIP	EEPROM		V07	C3	98
2865A	28	DIP	EEPROM		V07	C3	98
46C15	24	DIP	EEPROM		V07	CD	21
46C16	24	DIP	EEPROM		V07	CD	21
Fujitsu							
27128	28	DIP	EPROM		V05	45	51
27128A	28	DIP	EPROM		V07	93	51
2716	24	DIP	EPROM		V05	19	23
27256	28	DIP	EPROM		V06	93	32
2732	24	DIP	EPROM		V01	19	24
2732A	24	DIP	EPROM		V01	27	24
2764	28	DIP	EPROM		V05	45	33
27C128	28	DIP	EPROM		V05	45	51
27C256	28	DIP	EPROM		V05	45	32
27C256A	28	DIP	EPROM		V07	93	32
27C256H	28	DIP	EPROM		V07	93	32
27C512	28	DIP	EPROM		V07	4B	A4
27C64	28	DIP	EEPROM		V05	45	33
28C64	28	DIP	EEPROM		V07	C3	98
28C65	28	DIP	EEPROM		V07	C3	98

DEVICE LIST

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
General Instruments							
27256	28	DIP	EPROM		V07	93	32
27C512	28	DIP	EPROM		V07	4B	A4
5716	24	DIP	EPROM		V01	83	23
5816	24	DIP	EPROM		V01	37	23
Hitachi							
27128A	28	DIP	EPROM		V07	93	51
27256	28	DIP	EPROM		V07	93	32
27512	28	DIP	EPROM		V07	4B	A4
27C256	28	DIP	EPROM		V07	93	32
27C64	28	DIP	EPROM		V05	79	33
462532	24	DIP	EPROM		V01	19	25
462716	24	DIP	EPROM		V01	19	23
462732	24	DIP	EPROM		V01	19	24
48016	24	DIP	EPROM		V01	33	23
4827128	28	DIP	EPROM		V02	79	51
482732A	24	DIP	EPROM		V01	27	24
482764	28	DIP	EPROM		V02	79	33
58064	28	DIP	EEPROM		V07	D7	98
Intel							
27011	28	DIP	EPROM		V7.1	5C	C9
27128	28	DIP	EPROM		V05	79	51
27128A/B	28	DIP	EPROM		V01	93	51
2716	24	DIP	EPROM		V01	19	23
27256	28	DIP	EPROM		V01	93	32
2732	24	DIP	EPROM		V01	19	24
2732A	24	DIP	EPROM		V01	27	24
27512	28	DIP	EPROM		V05	4B	A4

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
27513	28	DIP	EPROM		V7.1	5B	5E
2764	28	DIP	EPROM		V05	79	33
2764A	28	DIP	EPROM		V01	93	33
27C256	28	DIP	EPROM		V07	5C	32
27C64	28	DIP	EPROM		V07	93	33
2815	24	DIP	EEPROM		V01	85	23
2816	24	DIP	EEPROM		V01	37	23
2816A	24	DIP	EEPROM		V04	A5	96
2817A	28	DIP	EEPROM		V05	BF	A2
2864A	28	DIP	EEPROM		V07	CC	98
87C256	28	DIP	EPROM		V07	5C	C8
87C64	28	DIP	EPROM		V07	93	3A
P27128A	28	DIP	EPROM		V07	5C	51
P27256	28	DIP	EPROM		V07	5C	32
P2732A	24	DIP	EPROM		V07	4D	24
P27512	28	DIP	EPROM		V07	5E	A4
P2764	28	DIP	EPROM		V07	79	33
P2764A	28	DIP	EPROM		V07	5C	33
Mitsubishi							
27128	28	DIP	EPROM		V02	79	51
2716	24	DIP	EPROM		V02	19	23
27256	28	DIP	EPROM		V06	93	32
2732	24	DIP	EPROM		V02	19	24
27512	28	DIP	EPROM		V06	4B	A4
2764	28	DIP	EPROM		V02	79	33
27C128	28	DIP	EPROM		V06	79	51
27C256	28	DIP	EPROM		V06	93	32

DEVICE LIST

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
Mostek							
2716	24	DIP	EPROM		V01	19	23
Motorola							
2532	24	DIP	EPROM		V01	19	25
2716	24	DIP	EPROM		V01	19	23
2816	24	DIP	EEPROM		V01	43	23
67256	28	DIP	EPROM		V07	49	32
6836E16	28	DIP	EEPROM		V05	2D	5A
68764	24	DIP	EPROM		V07	25	29
68766	24	DIP	EPROM		V07	25	29
National Semiconductor							
2532	24	DIP	EPROM		V01	19	25
2716	24	DIP	EPROM		V01	19	23
2732	24	DIP	EPROM		V01	19	24
2758A	24	DIP	EPROM		V01	19	22
2758B	24	DIP	EPROM		V07	19	35
27C16	24	DIP	EPROM		V05	19	23
27C16H	24	DIP	EPROM		V05	BD	23
27C256	28	DIP	EPROM		V07	5D	32
27C32	24	DIP	EPROM		V01	19	24
27C32H	24	DIP	EPROM		V04	BD	24
27C512	28	DIP	EPROM		V07	4C	A4
27C58A	24	DIP	EPROM		V07	19	22
27C58B	24	DIP	EPROM		V07	19	35
27C64	28	DIP	EPROM		V07	5D	33
27CP128	28	DIP	EPROM		V07	5D	BB
2816	24	DIP	EEPROM		V01	37	23

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
9716	24	DIP	EEPROM		V01	B3	23
9816A	24	DIP	EEPROM		V07	C3	96
9817A	28	DIP	EEPROM		V07	BF	A2
NEC Corporation							
27128	28	DIP	EPROM		V05	79	51
2716	24	DIP	EPROM		V01	19	23
27256	28	DIP	EPROM		V06	45	32
27256A	28	DIP	EPROM		V06	93	32
2732	24	DIP	EPROM		V01	19	24
2732A	24	DIP	EPROM		V01	27	24
2764	28	DIP	EPROM		V07	79	33
27C256	28	DIP	EPROM		V06	45	32
27C256A	28	DIP	EPROM		V07	48	32
27C512	28	DIP	EPROM		V07	4E	A4
28C64	28	DIP	EEPROM		V07	C3	98
OKI Semiconductor							
2532	24	DIP	EPROM		V06	19	25
27128	28	DIP	EPROM		V05	79	51
2716	24	DIP	EPROM		V01	19	23
2732	24	DIP	EPROM		V01	19	24
2732A	24	DIP	EPROM		V01	27	24
27512	28	DIP	EPROM		V06	5E	A4
2758	24	DIP	EPROM		V01	19	22
2764	28	DIP	EPROM		V05	79	33
2816A	24	DIP	EEPROM		V07	B7	23

DEVICE LIST

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
Ricoh							
27C256	28	DIP	EPROM		V07	93	32
27C32	24	DIP	EPROM		V07	27	24
27C64	28	DIP	EPROM		V07	79	33
5H32	24	DIP	EPROM		V01	27	24
Rockwell International							
2816A	24	DIP	EPROM		V04	A5	96
87C32	24	DIP	EPROM		V01	27	24
87C64	28	DIP	EPROM		V01	79	33
Samsung							
2816A	24	DIP	EEPROM		V07	B7	23
2817A	28	DIP	EEPROM		V07	B7	A2
2864A	28	DIP	EEPROM		V07	C3	98
2865A	28	DIP	EEPROM		V07	C9	A6
SEEQ							
27128	28	DIP	EPROM		V07	79	51
2764	28	DIP	EPROM		V05	79	33
27C256	28	DIP	EPROM		V01	93	32
2816A	24	DIP	EEPROM		V05	B7	23
2816AH	24	DIP	EEPROM		V07	DF	23
2817A	28	DIP	EEPROM		V01	BF	A2
2817AH	28	DIP	EEPROM		V07	BF	A2
2864H	28	DIP	EEPROM		V07	C9	A6
28C256	28	DIP	EEPROM		V07	B8	99
28C64	28	DIP	EEPROM		V07	B8	98
5133	28	DIP	EPROM		V05	79	33
5143	28	DIP	EPROM		V05	79	51

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
5213	24	DIP	EPROM		V01	A5	96
5213H	24	DIP	EPROM		V04	B9	96
52B13	24	DIP	EPROM		V01	A5	96
52B13H	24	DIP	EPROM		V04	B9	96
52B23	28	DIP	EPROM		V04	AB	97
52B23H	28	DIP	EPROM		V04	F1	97
52B33	28	DIP	EPROM		V04	AB	98
52B33H	28	DIP	EPROM		V04	F1	98
5516A	24	DIP	EPROM		V05	B7	23
SGS-ATES Semiconductor Corp.							
2532	24	DIP	EPROM		V01	19	25
2716	24	DIP	EPROM		V01	19	23
27256	28	DIP	EPROM		V07	93	32
2732A	24	DIP	EPROM		V07	27	24
2764	28	DIP	EPROM		V07	79	33
2764A	28	DIP	EPROM		V07	93	33
Sharp							
57256	28	DIP	EPROM		V07	3B	32
5749	24	DIP	EPROM		V07	7C	67
5764	28	DIP	EPROM		V07	3B	33
Signetics							
27C256F	28	DIP	EPROM		V07	93	32
27C64AF	28	DIP	EPROM		V07	93	33
SMOS Systems							
27128H	28	DIP	EPROM		V07	79	51
27C256H	28	DIP	EPROM		V07	93	32
27C64H	28	DIP	EPROM		V07	79	33

DEVICE LIST

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
Texas Instruments							
2516	24	DIP	EPROM		V05	BD	23
2532	24	DIP	EPROM		V05	BD	25
2532A	24	DIP	EPROM		V07	63	25
2564	28	DIP	EPROM		V05	BD	30
27128	28	DIP	EPROM		V05	79	51
27128A	28	DIP	EPROM		V07	93	51
27256	28	DIP	EPROM		V07	93	32
2732	24	DIP	EPROM		V01	BD	24
2732A	24	DIP	EPROM		V05	63	24
2764	28	DIP	EPROM		V05	79	33
27C128	28	DIP	EPROM		V07	93	51
27C256	28	DIP	EPROM		V07	93	32
Thomson Semiconducteurs							
2716	24	DIP	EPROM		V01	19	23
2732	24	DIP	EPROM		V07	19	24
2764	28	DIP	EPROM		V07	35	33
27C256	28	DIP	EPROM		V07	93	32
27C64	28	DIP	EPROM		V07	93	33
Toshiba							
24128	28	DIP	EPROM		V07	79	51
24128A	28	DIP	EPROM		V07	5C	51
24256	28	DIP	EPROM		V07	45	32
24256A	28	DIP	EPROM		V07	5C	32
2464	28	DIP	EPROM		V07	79	33
2464A	28	DIP	EPROM		V07	5C	33
27128	28	DIP	EPROM		V02	79	51
27128A	28	DIP	EPROM		V07	5C	51

Device Part Number	Pins	Package Type	Part Type	Footnotes	Version	Family Code	Pinout Code
27256	28	DIP	EPROM		V07	45	32
27256A	28	DIP	EPROM		V07	5C	32
2732	24	DIP	EPROM		V01	19	24
2732A	24	DIP	EPROM		V01	27	24
27512	28	DIP	EPROM		V07	5E	A4
2764	28	DIP	EPROM		V02	79	33
2764A	28	DIP	EPROM		V07	5C	33
57256	28	DIP	EPROM		V05	45	32
57256A	24	DIP	EPROM		V07	5C	32
VLSI							
27C128	28	DIP	EPROM		V07	5D	51
27C256	28	DIP	EPROM		V07	5D	32
27C512	28	DIP	EPROM		V07	4C	A4
27C64	28	DIP	EPROM		V06	5D	33
WaferScale Integration, Inc.							
27C128F	28	DIP	EPROM		V07	3C	51
57C191	24	DIP	EPROM		V07	7B	21
57C43	24	DIP	EPROM		V07	7B	63
57C49	24	DIP	EPROM		V07	3C	67
57C64F	28	DIP	EPROM		V07	3C	33
Xicor							
2804A	24	DIP	EEPROM		V05	B7	82
2816A	24	DIP	EEPROM		V05	B7	23
28256	28	DIP	EEPROM		V07	BA	99
2864A	28	DIP	EEPROM		V05	C3	98

DEVICE LIST